

# The Green Infrastructure Land Network

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*A Reference for Smart Growth  
Land Use Decisions*



# Green Infrastructure Assessment



## The Green Infrastructure Land Network

- An opportunity to protect and link Maryland's remaining ecologically valuable lands
- A conservation guide - not a plan or mandate

# Green Infrastructure Assessment

## Purpose of the Green Infrastructure Land Network

- 1) Systematically identify and protect ecologically important lands
- 2) Address problems of forest fragmentation, habitat degradation and water quality
- 3) Maximize the influence and effectiveness of public and private conservation investments
- 4) Promote shared responsibilities for land conservation between public and private sectors
- 5) Guide and encourage compatible uses and land management practices

# Green Infrastructure Assessment

## Greenways

Natural areas with some form of permanent protection  
Basic framework existing stream valley parks

### Ecological Corridors

- Green Infrastructure  
(Identified through Green  
Infrastructure Assessment)

### Recreational Corridors

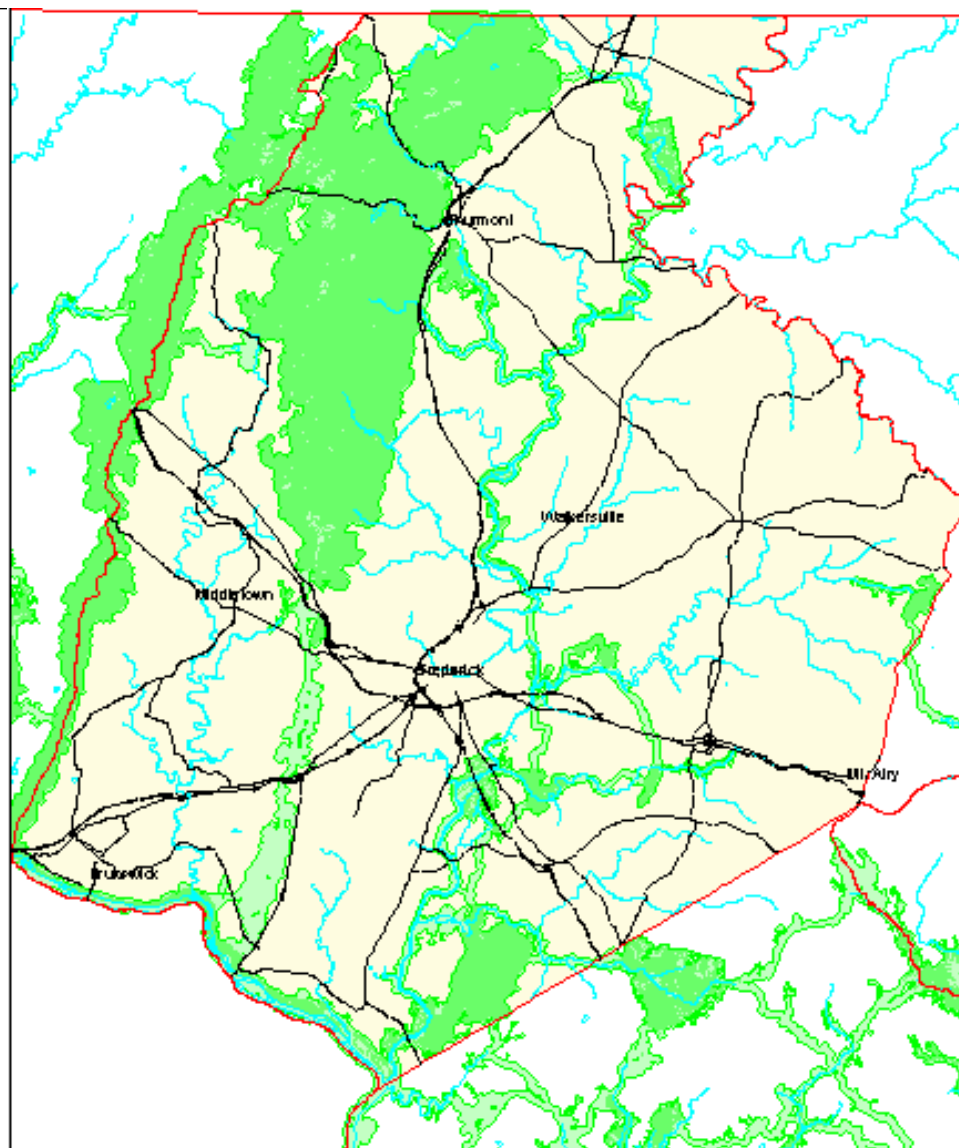
- Land-based trails
- Water trails  
(Identified through state  
and local trail plans)

# Green Infrastructure Assessment

## Location of the Green Infrastructure



Maryland's Green Infrastructure Network is located on public and private lands throughout the state.



Maryland Greenways Atlas

KEY:  
Green Infrastructure  
Hub  
Corridor



# Green Infrastructure Frederick County

Maryland Department of Natural Resources  
Chesapeake and Coastal Watershed Service

# Green Infrastructure Assessment



## Protection of the Green Infrastructure Land Network

Relies on cooperative efforts of  
many people and organizations

- government agencies
- land trusts
- interested land owners

# Green Infrastructure Assessment



## The Green Infrastructure Land Network Includes :

- large tracts of forest land
- important wildlife habitat
- wetlands
- riparian corridors
- existing park and conservation lands

# Green Infrastructure Assessment



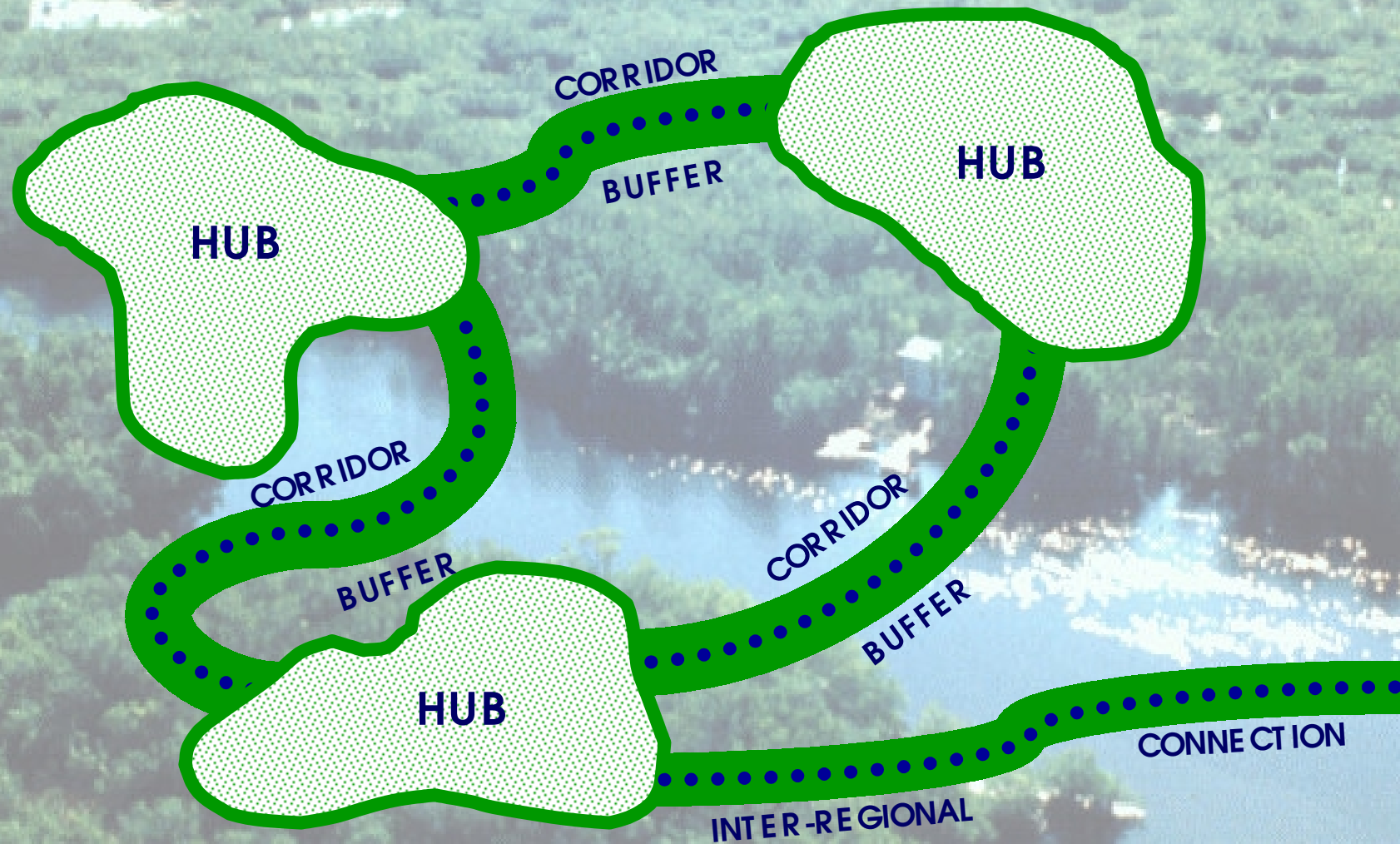
## Components of the Network

Hubs: large contiguous blocks of natural resource lands

Corridors: best ecological route between hubs

# Green Infrastructure Assessment

## Green Infrastructure Land Network

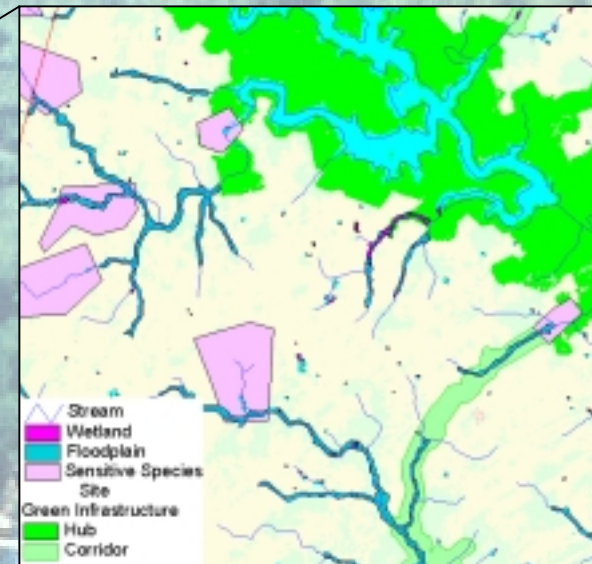


# Green Infrastructure Assessment

## Green Infrastructure vs. Local Natural Resource Conservation and Restoration

- **Broad or Regional Scale - Green Infrastructure Elements**

- large blocks of forest
- large wetland complexes
- large, unique habitats
- major landscape corridors



- **Fine or Local Scale - Natural Resource Protection Elements Outside of Hubs and Corridors**

- many streams and their buffers
- smaller / isolated wetlands
- small and/or isolated sensitive plant and animal species and/or habitats
- steep slopes, flood plains, other sensitive areas

# Green Infrastructure Assessment

## Integrating Regional and Local Natural Resource Protection

### Green Infrastructure Elements

Cross-Watershed  
Linkages

Major Riparian Link-ages  
Among Hubs

Large, Intact Forest  
Habitat Blocks

Large Wetland  
Complexes



### Complementary Elements

Small or Isolated  
Natural Heritage  
Elements

Streams and their  
Buffers

Steep Slopes,  
Floodplains, and  
Other Locally Sensitive  
Features

Small, Isolated  
Wetlands

# Green Infrastructure Assessment

## Green Infrastructure Components

### Identification Phase Steps 1-3

#### Favor:

- Forests
- Wetlands
- Sensitive Species
- Protected Lands
- Streams and Waterways
- Healthy Aquatic Systems

#### Avoid:

- Roads
- Developed Areas
- Degraded Aquatic Systems

### Analysis Phase Steps 4-5

#### Ecological Factors:

- Interior Forest
- Unmodified & Special Wetlands
- Sensitive Species & other Heritage Elements
- Minimally Disturbed Headwaters
- Adjacent Land Cover
- "Remoteness" & "Intactness"
- Slope

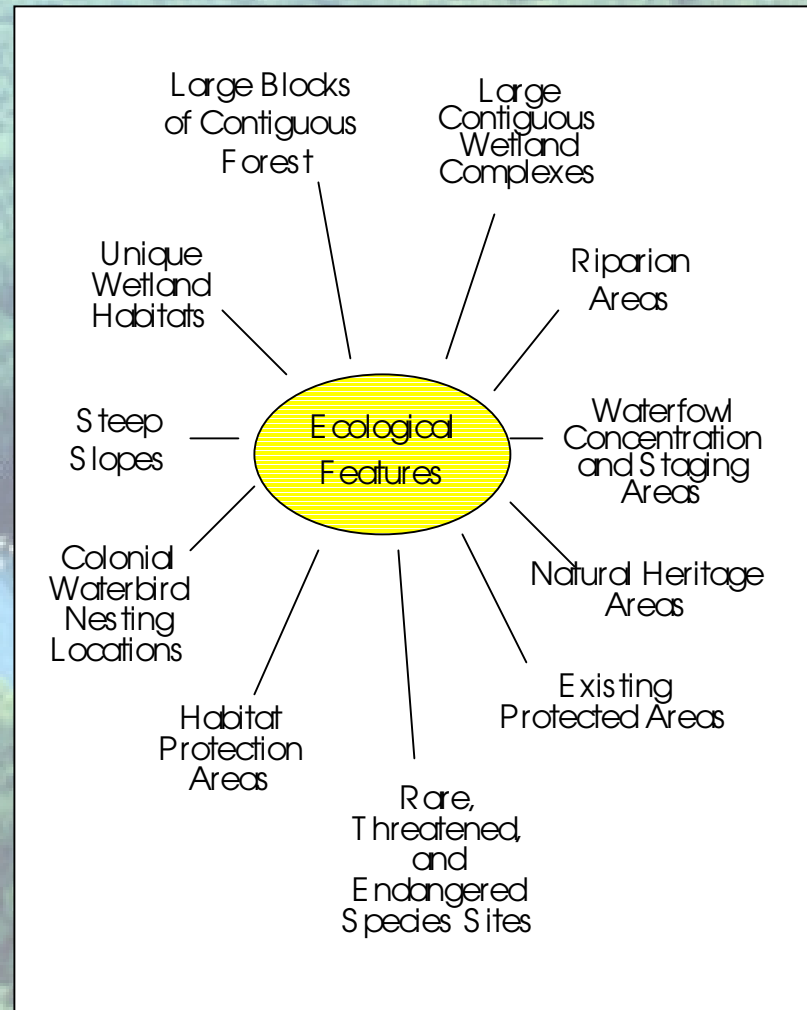
#### Vulnerability Factors

- Degrees of Protection
- Development Pressure
- Zoning for Development

# Green Infrastructure Assessment

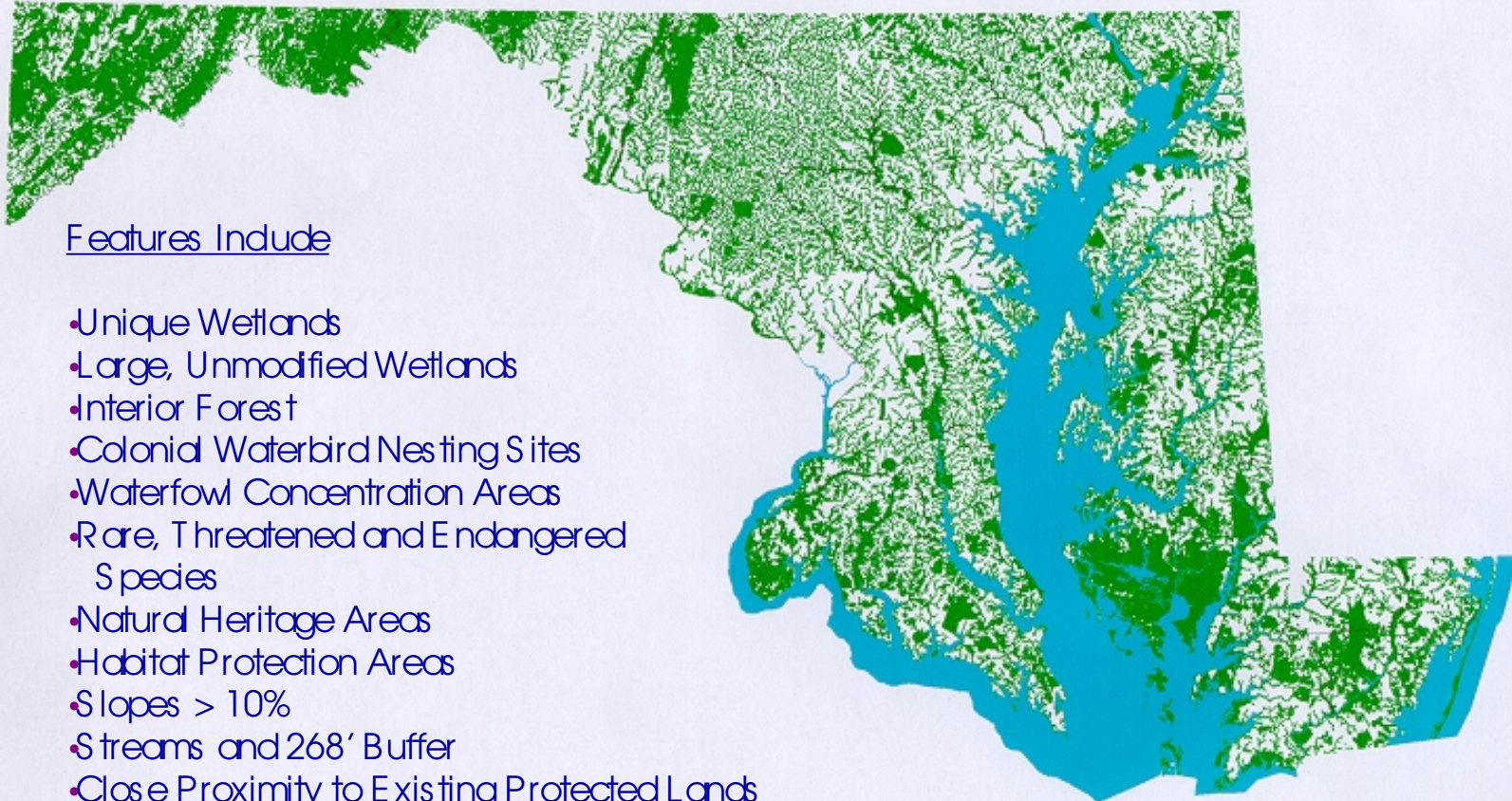
## Step 1: Selection of Ecological Components

- Incorporate landscape ecology principles
- Coarse scale analysis
- Strive to include full range of ecosystem elements
- Limited to features with GIS data available statewide



# Green Infrastructure Assessment

## Composite Map of Important Ecological Features

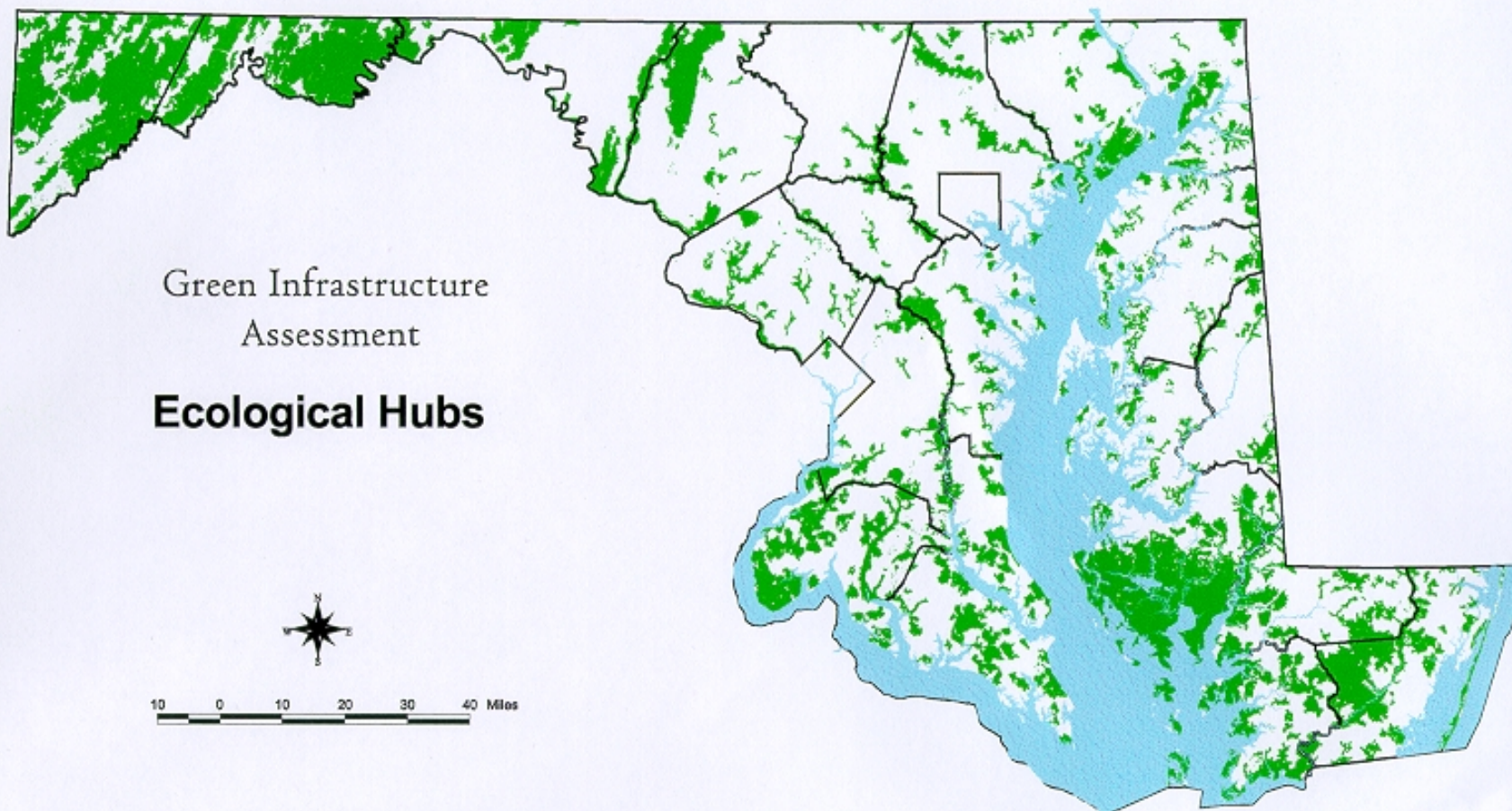


# Green Infrastructure Assessment

## Step 2: Identification of Hubs

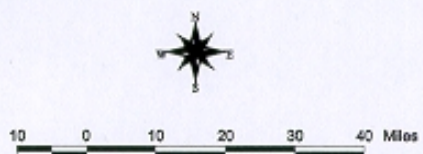
- Large, contiguous blocks of natural resource lands
- Forests, wetlands, and other important habitats
- Hubs range in size from 500 acres and up





Green Infrastructure  
Assessment

**Ecological Hubs**

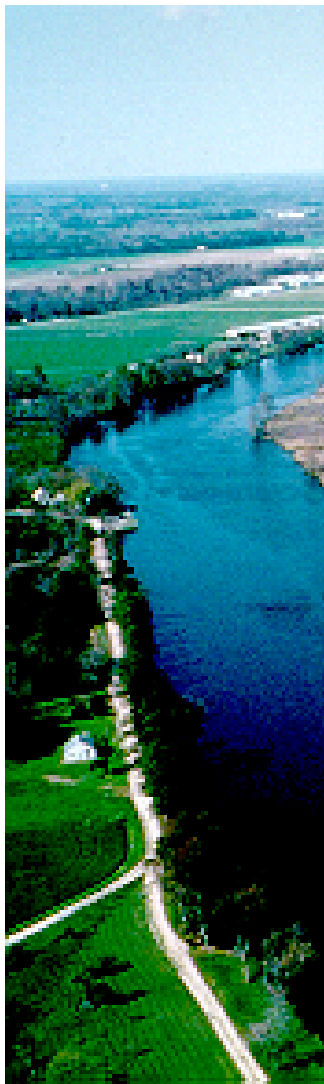


Maryland Department of Natural Resources  
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Watershed Management and Analysis Division

# Green Infrastructure Assessment

## Step 3: Identification of Corridors

- Assess landscape between hubs for linkage potential
- Includes riparian, upland, and “mixed” connections
- Width based on 1100’ or FEMA flood plain, whichever is greater



# Green Infrastructure Assessment

## Corridor Delineation Process

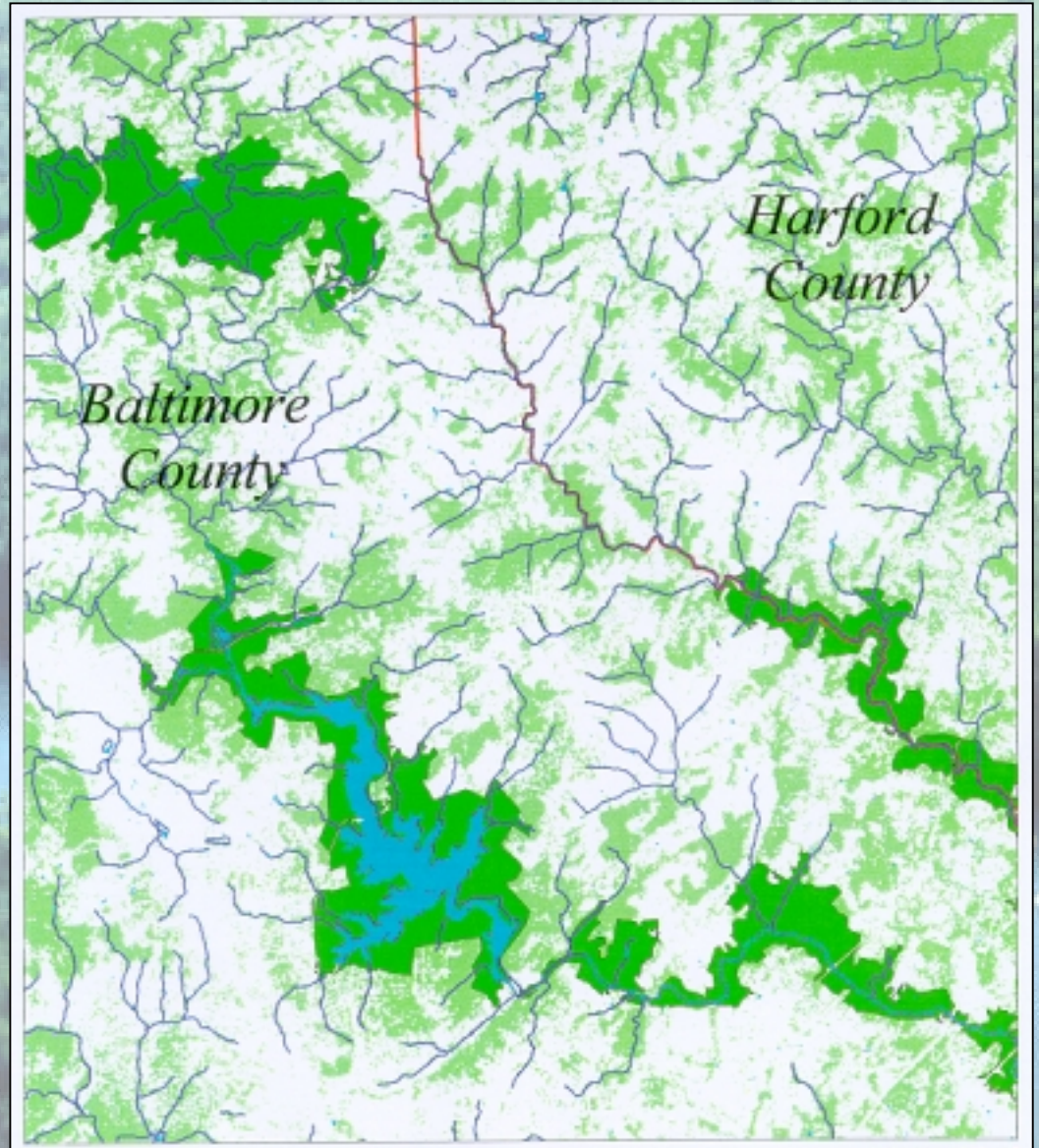
(1) Identify Hubs  
to Link



# Green Infrastructure Assessment

## Corridor Delineation Process

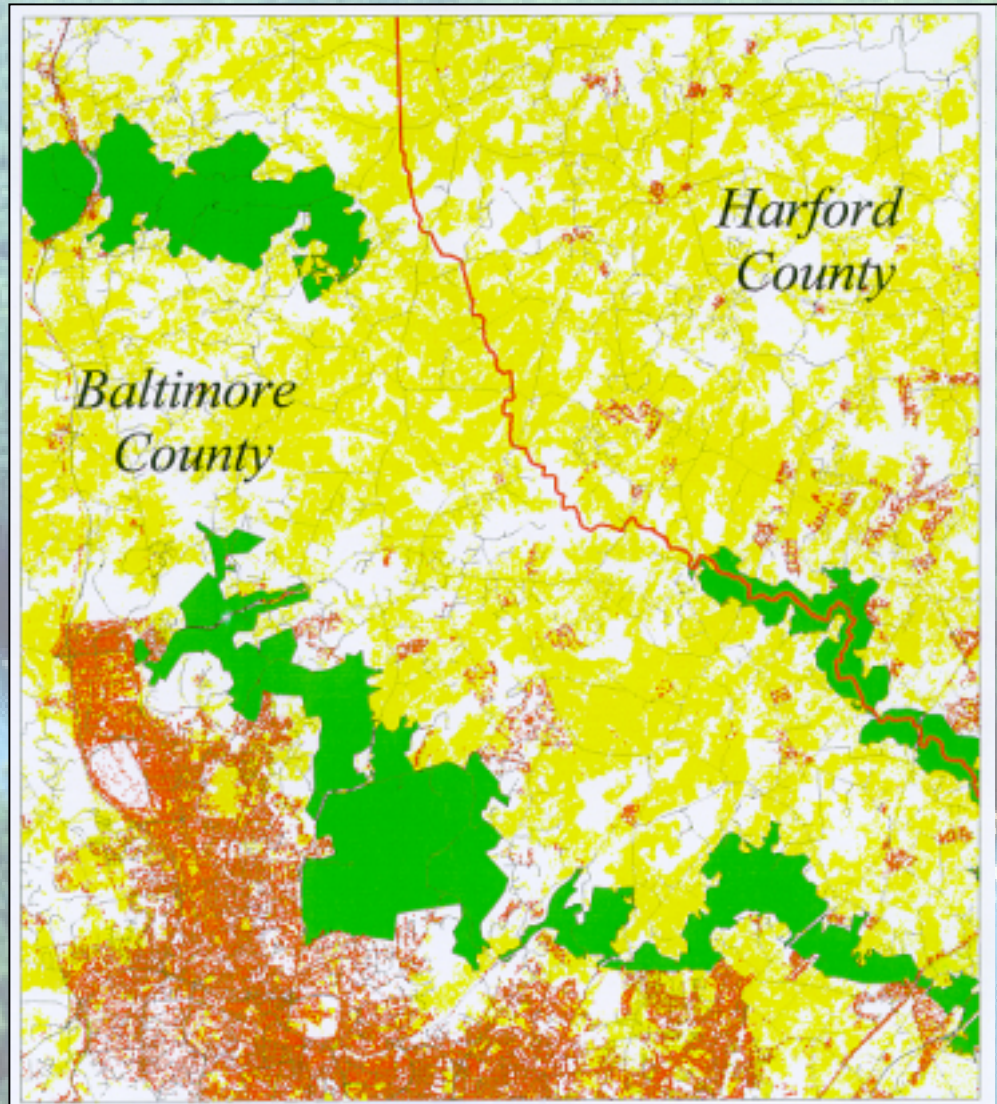
(2) Assess  
Landscape  
between hubs for  
favorable features  
(eg. forests, wetlands,  
streams, aquatic  
areas of high  
integrity)



# Green Infrastructure Assessment

## Corridor Delineation Process

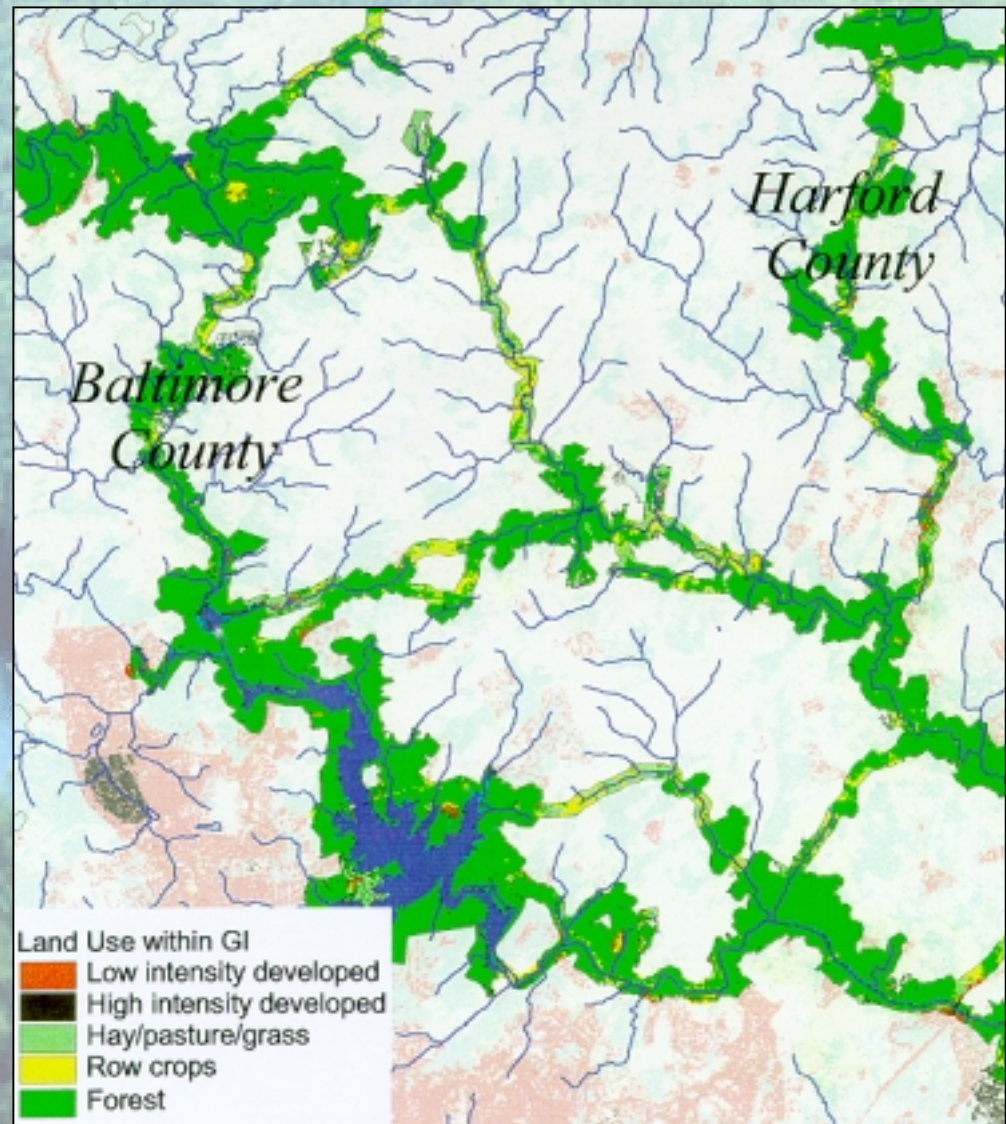
(3) Assess Landscape between hubs for favorable features (eg. developed areas, roads, degraded aquatic areas, manipulated landscapes)



# Green Infrastructure Assessment

## Corridor Delineation Process

(4) Given the information assembled in steps 1-3, delineate potential corridors connecting hubs



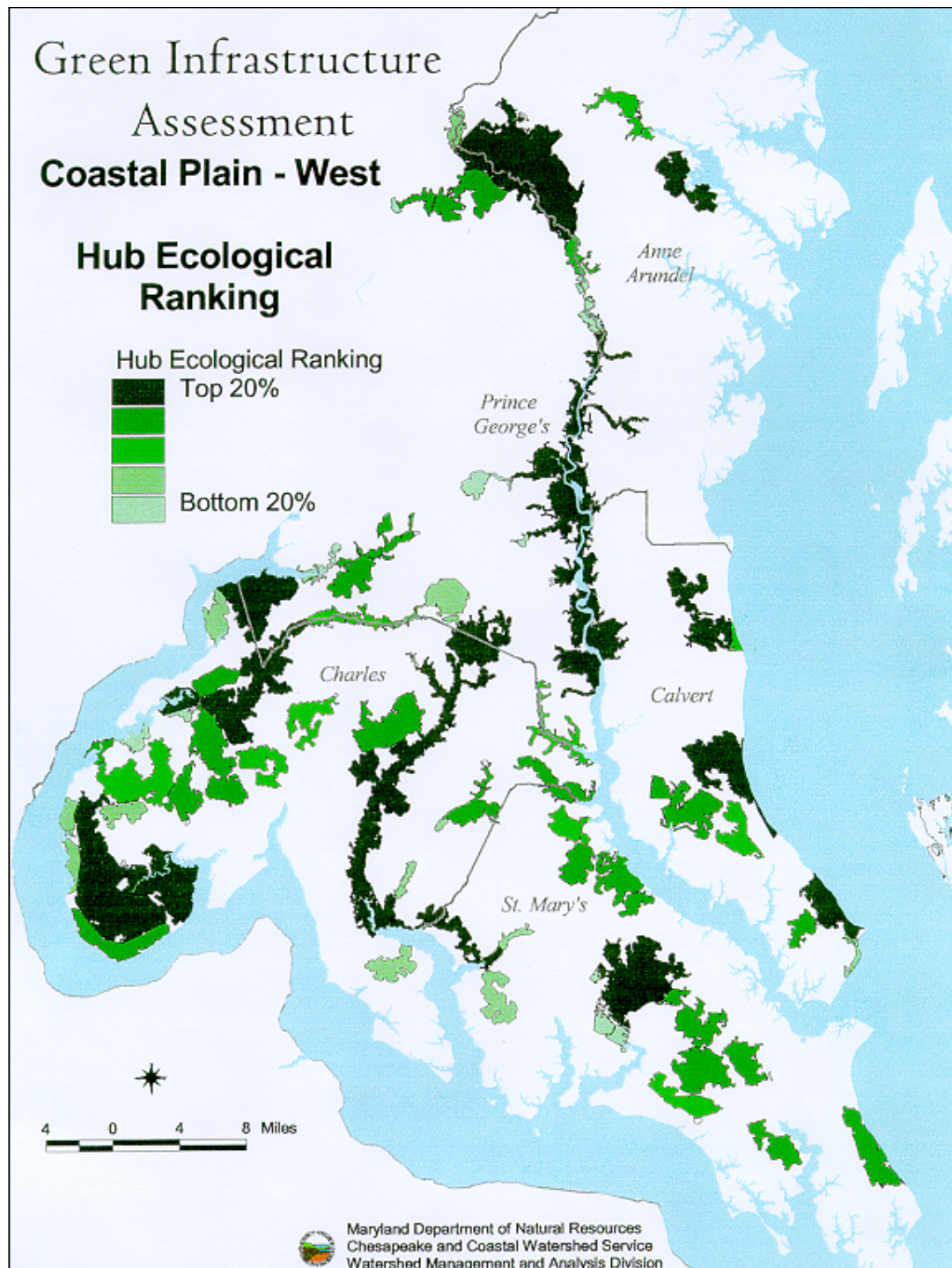
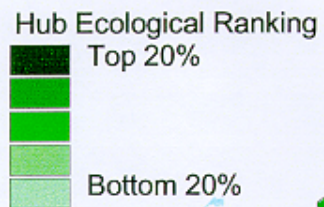
# Green Infrastructure Assessment

## Step 4: Regional Evaluation of Hubs and Corridors

- Individual hubs or corridors are analysis units
- Data base of hub characteristics
- Includes information on ecological significance, vulnerability, and degree of protection
- Ranking based on single or multiple criteria for each physiographic region
- Comparing hubs or corridors for conservation value, feasibility and urgency of action

# Green Infrastructure Assessment Coastal Plain - West

## Hub Ecological Ranking



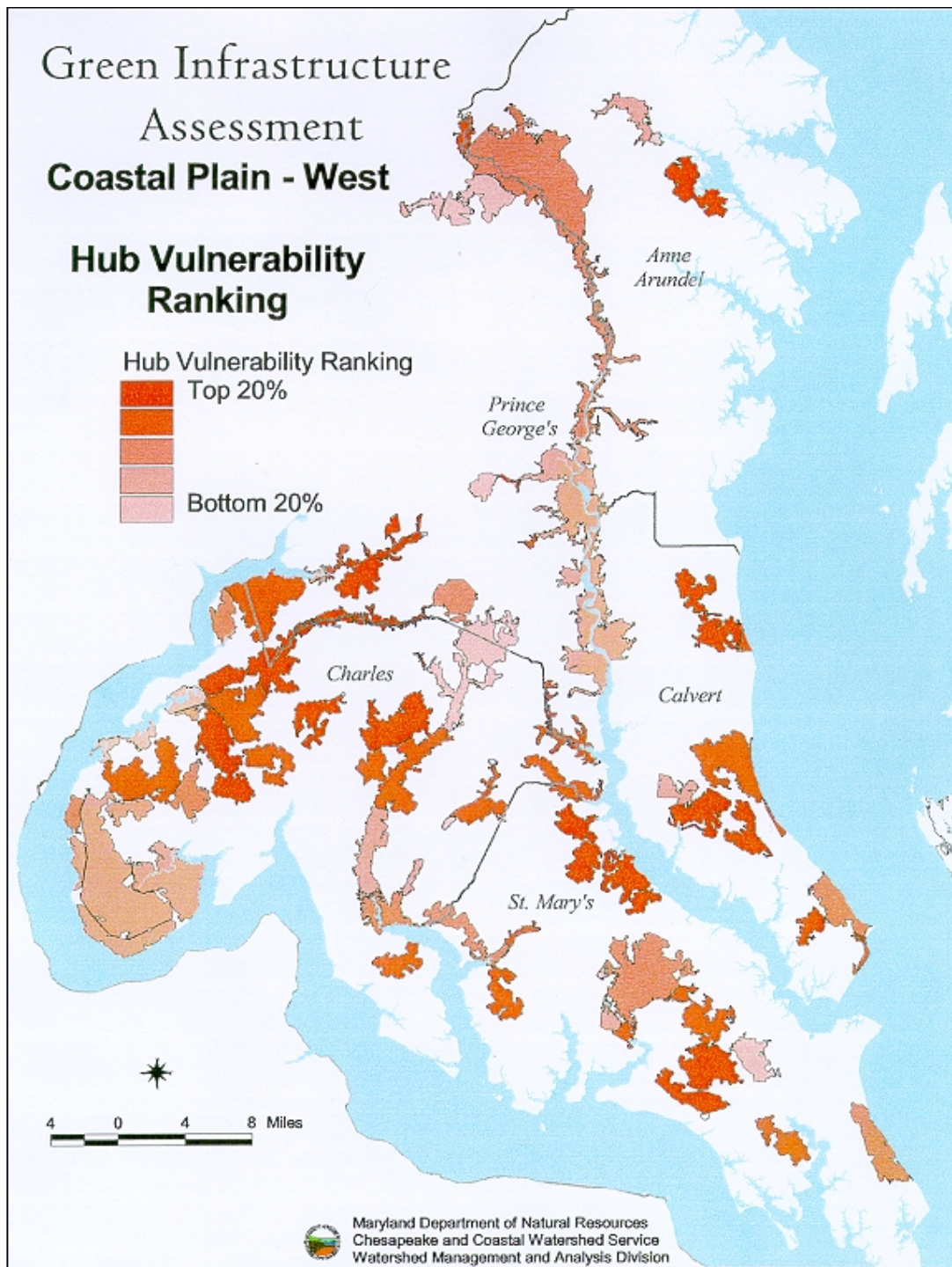
# Green Infrastructure Assessment Coastal Plain - West

## Hub Vulnerability Ranking

Hub Vulnerability Ranking

Top 20%

Bottom 20%

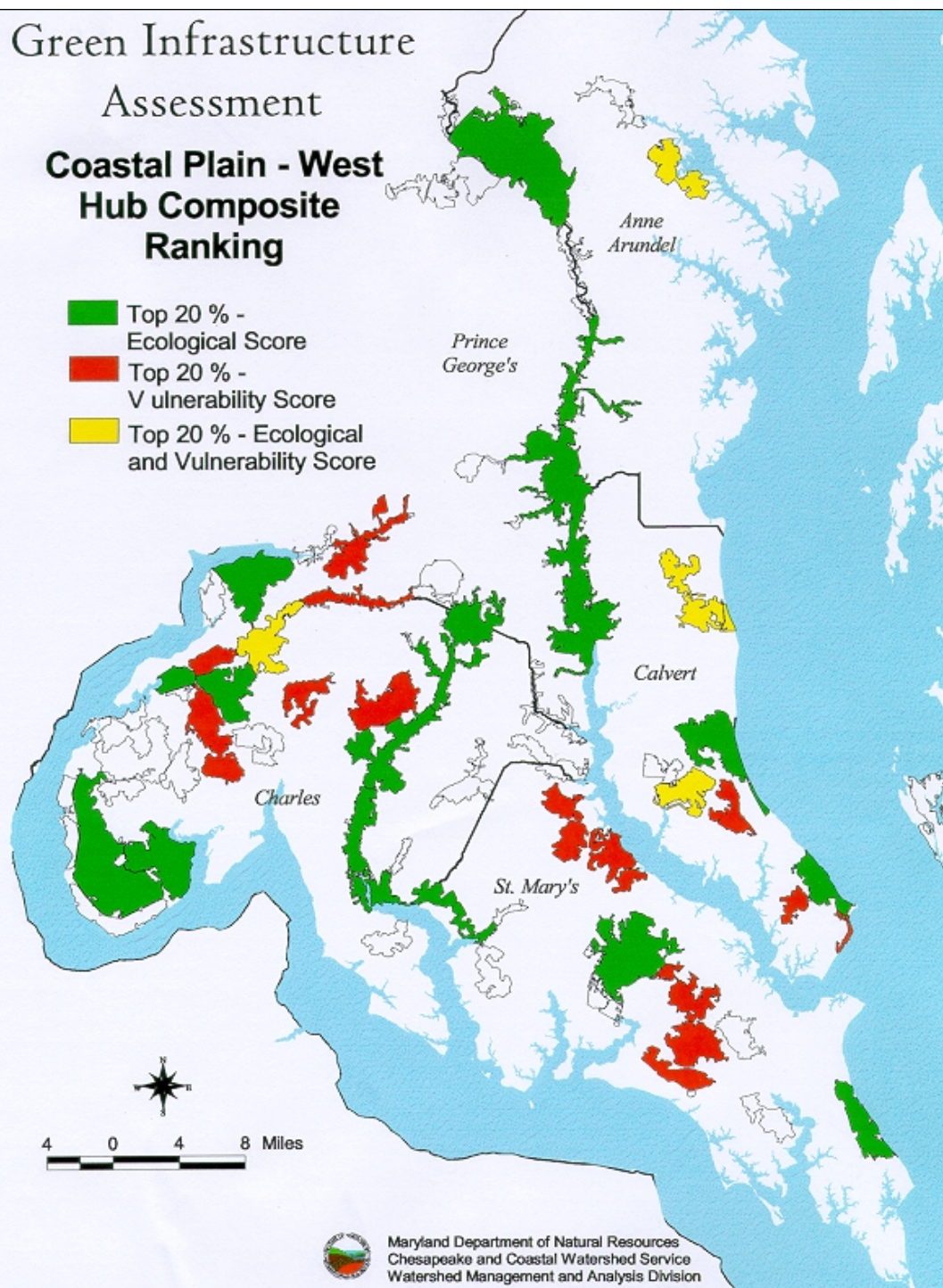


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# Green Infrastructure Assessment

## Coastal Plain - West Hub Composite Ranking

- Top 20 % -  
Ecological Score
- Top 20 % -  
Vulnerability Score
- Top 20 % - Ecological  
and Vulnerability Score

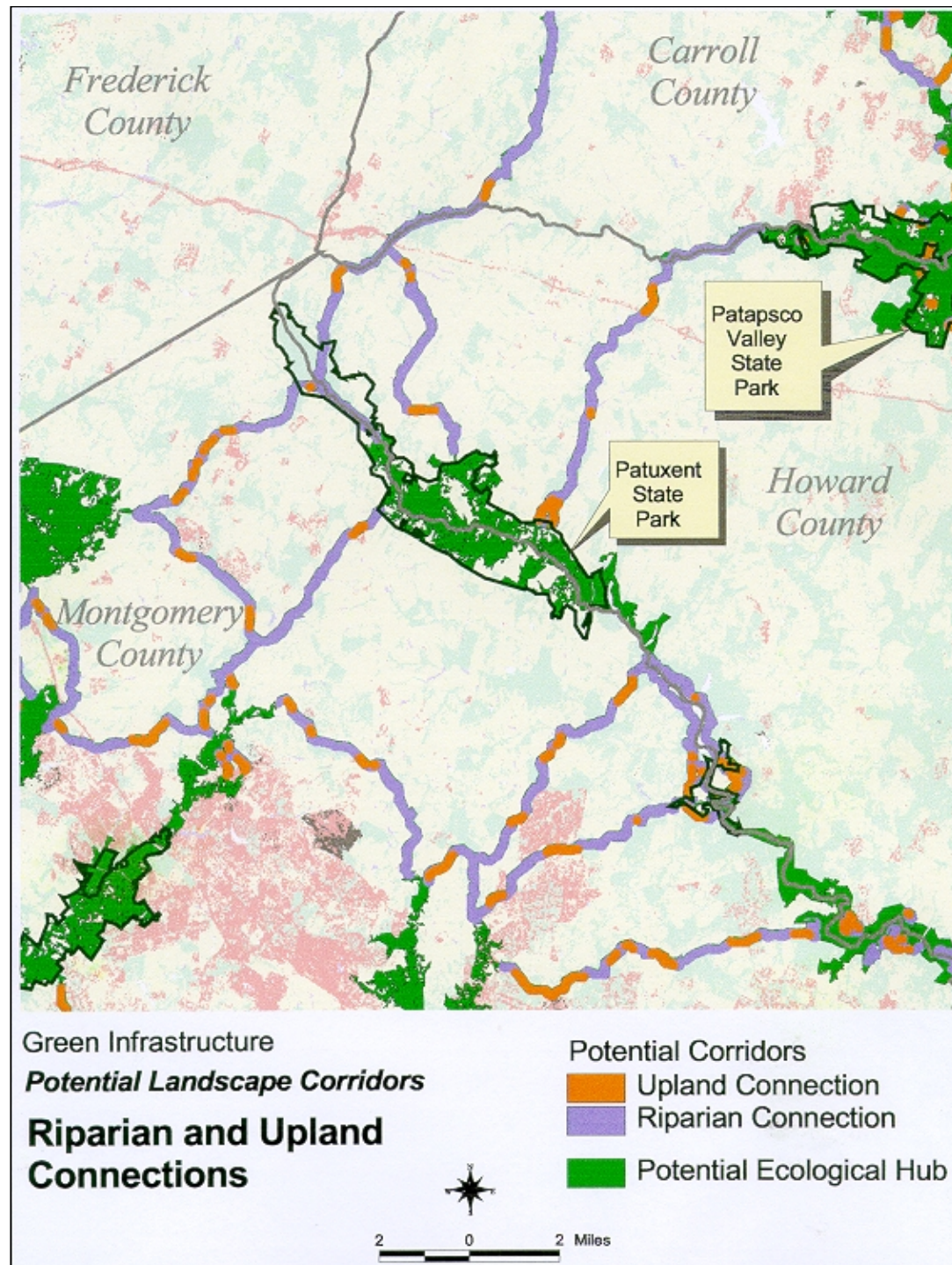


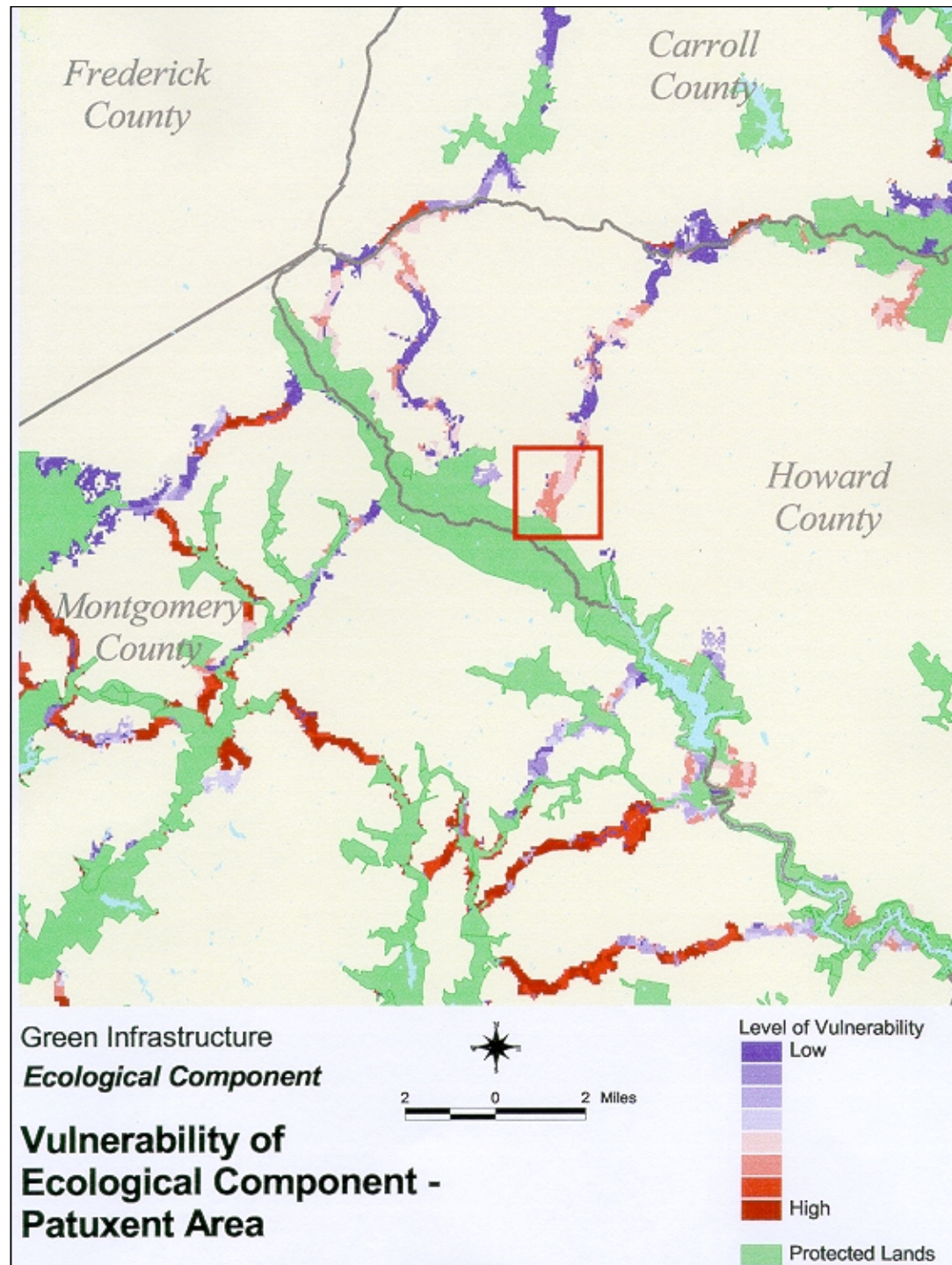
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# Green Infrastructure Assessment

## Step 5: Local Evaluation of Hubs and Corridors

- Evaluating landscape within hubs & corridors
- Accounts for local variation in ecological significance or vulnerability
- Identifying conduits and barriers to movement
- Identification of local conservation and restoration opportunities





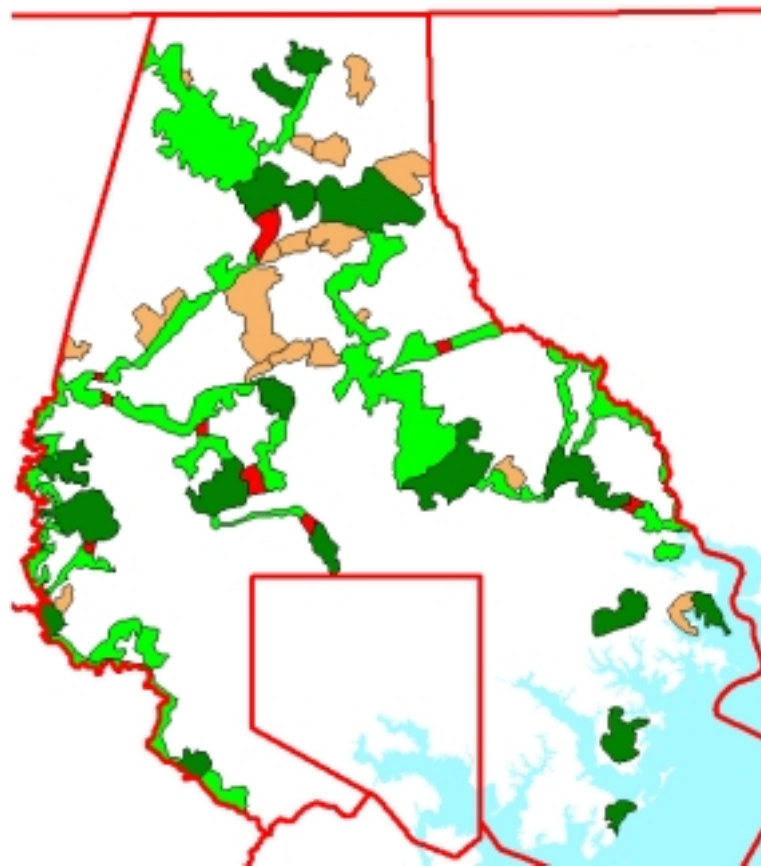


# Green Infrastructure Assessment

## Hub and Corridor Identification



Green Infrastructure  
Ecological Component



Baltimore County  
Greenway Methodology

# Green Infrastructure Assessment

## Summary: Status and Next Steps

Jan. 1998	—	County model and pilot completed
May 1999	—	Statewide methodology drafted and peer-reviewed
June 1999	—	Draft Green Infrastructure maps prepared
July-Nov. 1999	—	County reviews of draft maps
Dec. 1999	—	Revision of maps
Early 2000	—	Publish revised maps
Fall 2000	—	Potential for mid-atlantic conference